

AMENDMENTS TO THE TITLE

The title of the invention (on page 1) is amended as follows:

~~SNAPSHOT MARKER~~ SYSTEM AND METHOD TO PROTECT DATA STORED IN A  
STORAGE SYSTEM

AMENDMENTS TO THE SPECIFICATION

The paragraph beginning at page 10, line 5 has been amended as follows:

Referring to Fig. 3B, as segments are needed to store data, the next available segment descriptor, e.g., segment descriptor 32, is identified from the free segment list 50, the data is stored in the segment, and the segment descriptor 32 is assigned to a new table called a segment map 66. The segment map 66 maintains information representing how each segment defines the virtual storage device. More specifically, the segment map provides the logical sector to physical sector mapping of a virtual storage device. After the free segment descriptor 32 is moved or stored in the appropriate area of the segment map 66, which in this example is slot 2 (70), the descriptor is no longer a free segment but is now an allocated segment. A detailed description of this method for dynamically allocating disk space can be found in U.S. Patent Application No. 10/052,208 entitled “Dynamic Allocation of Computer Memory,” filed January 17, 2002, published July 17, 2003 as Publication No. US 2003-0135709 A1, which is incorporated herein by reference in its entirety.

The paragraph beginning at page 10, line 21, is amended as follows:

One technique for performing snapshots that is known in the art entails first directing the client server to suspend transmissions of data to disk. Data in the cache is then flushed to disk, and then the snapshot is performed. This prior art method is illustrated with reference to Figs. 4A-4C. In this example, all data items inserted in cache 340 originate from a single client server, e.g., file server 140-1. Fig. 4A illustrates the contents of cache 340 at the moment controller 320 determines that a snapshot of data in one or more storage devices is requested. At that moment, cache 340 contains a queue made up of data items 530-534. It

should be noted that the direction arrow 325 represents data transmitted to cache 340 for entry into the queue. The direction arrow 245 represents data flushed from cache 340. Referring to Fig. 4A, data item 530 is the last data item in the queue, indicating that it was the last data item transmitted to cache 340. After controller 320 determines that a snapshot has been requested, controller 320 stops transmitting data to cache 340 and waits until cache 340 flushes all of its contents to storage devices 250. If the snapshot request was received from a client server, e.g., file server 140-1, controller 320 directs the file server to temporarily cease transmitting data to disk. Fig. 4B illustrates schematically the contents of cache 340 after data items 531-534 have been flushed to disk, but before data item 530 has been flushed to disk. Fig. 4C illustrates schematically the contents of cache 340 after data item 530 has been flushed to disk. Cache 340 is now empty. At this point, controller 320 detects that cache 340 is empty and performs the snapshot. Controller 320 notifies file server 140-1 that it may continue transmitting data to disk.